September-October 1989

FAA Aviation NEWS

A DOT / FAA FLIGHT STANDARDS SAFETY PUBLICATION

In this Issue:

Airborne Collision Avoidance Radar, p. 3

Antidotes for Negative Attitudes, p. 6

Transponder Altitude Verification, p. 10

Bathing the Birdie, p. 12

Aviation's Unsung Heroes, p. 13

U.S. Department
of Transportation
**Federal Aviation
Administration**

FAA Aviation NEWS

September/October 1989
Volume 28, Number 5

Samuel K. Skinner, *Secretary of Transportation*
James B. Busey, *FAA Administrator*
C. R. Melugin, Jr., *Executive Director for Regulatory Standards and Compliance*
Anthony J. Broderick, *Associate Administrator for Regulation and Certification*
Robert L. Goodrich, *Acting Director, Flight Standards Service*
W. Michael Sacrey, *Manager, General Aviation Staff*
Gary D. Koch, Sr., *Manager, Accident Prevention Program Branch*
David Gelfan, *Editor*
Louise Oertly, *Associate Editor*

FAA AVIATION NEWS is published by Flight Standards' Accident Prevention Program Branch, AFS–20, Federal Aviation Administration, Department of Transportation, Washington, DC 20591, in the interest of flight safety. The magazine is designed to promote safety in the air by calling the attention of general aviation airmen to current technical, regulatory, and procedural matters affecting the safe operation of aircraft. Use of funds for printing FAA AVIATION NEWS was approved by the Office of Management and Budget. All printed materials contained herein are advisory or informational in nature and should not be construed as having regulatory effect. The FAA does not officially endorse any goods, services, materials, or products of manufacturers that may be mentioned. **Certain details of accidents described herein are altered to protect the privacy of those involved.**

SUBSCRIPTION SERVICES

FAA AVIATION NEWS is sold on subscription by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402–9371. Use the self-mailer form in the centerfold of this magazine to subscribe. Cost: $6.50 ($8.15 foreign) for one year, $13 ($16.30 foreign) for two years. Prices are subject to change without prior notice.

Please anticipate one or two months for processing orders. Subscriptions are for one year only, and only one renewal notice is sent. Act promptly to avoid lapse of subscription.

Change of Subscriber's Address or Subscription Problems. Send your label with correspondence to Sup Doc, Attn: Chief, Mail List Branch, Mail Stop: SSOM, Washington, DC 20402–9373.

BRIEFS

MODE C CUT-OFF DATE. FAA has agreed to extend for six months the date after which all new transponder installations in general aviation aircraft must be Mode S equipment. Non-air carrier operators will be allowed to have Mode A/C transponders installed until July 1, 1992, provided that these transponders were manufactured before January 1, 1991.

This ruling is in response to a user's petition, based on the anticipated inability of transponder manufacturers to meet the projected demand for Mode S installations, if the original January 1, 1992, cut-off date was adhered to.

MILLIBARS VS. INCHES. U.S. pilots who have occasion to operate abroad are reminded that in much of the foreign airspace, including Europe, altimeter settings are given in millibars of mercury--not inches. Consult the International Flight Information Manual for county by county usage.

DIRTY BLADES. Accumulations of fish fertilizer material on the rotor blades of a Hughes 269 helicopter caused an abrupt loss of lift and subsequent destruction of the aircraft recently. Investigators found that the helicopter, used in agriculture application, had a rough coating of fertilizer and dirt which contributed to a blade stall at a high angle of attack, as the pilot was attempting to climb out of ground effect.

FOR LACK OF A LOCK. The destruction of a similar type helicopter was attributed to the loss of the tie-bolt nut which clamps the first and second stage gas generator turbine wheels together. Pieces of turbine wheels then punctured the main fuel tank and a fire occurred. The passengers and pilot escaped, but the aircraft was a total loss. Apparently the tie-bolt nut had not been locked in place.

HOLD THE MUSHROOMS. Loss of braking and directional control after touchdown caused a jetliner to skid off the runway. After the gear collapsed, the right wing tore loose and fire broke out. All occupants emerged safely and the fire was brought under control. The runway, already slick from a tropical rainstorm, was made virtually unusable by thick clusters of mushrooms sprouting up through cracks in the pavement.

Airborne Collision Avoidance Radar

Air Carrier Installation of TCAS II Will Reduce Midair Accident Potential

For over 30 years, the aviation community has been seeking to develop an automated airborne collision avoidance system that would complement, but not interfere with, FAA's established, ground-based air traffic control service. For the past eight years, that search has focused on the automatic communication capability offered by transponders, the airborne electronic units which can be interrogated by ATC radar to determine aircraft position—and also altitude and identity.

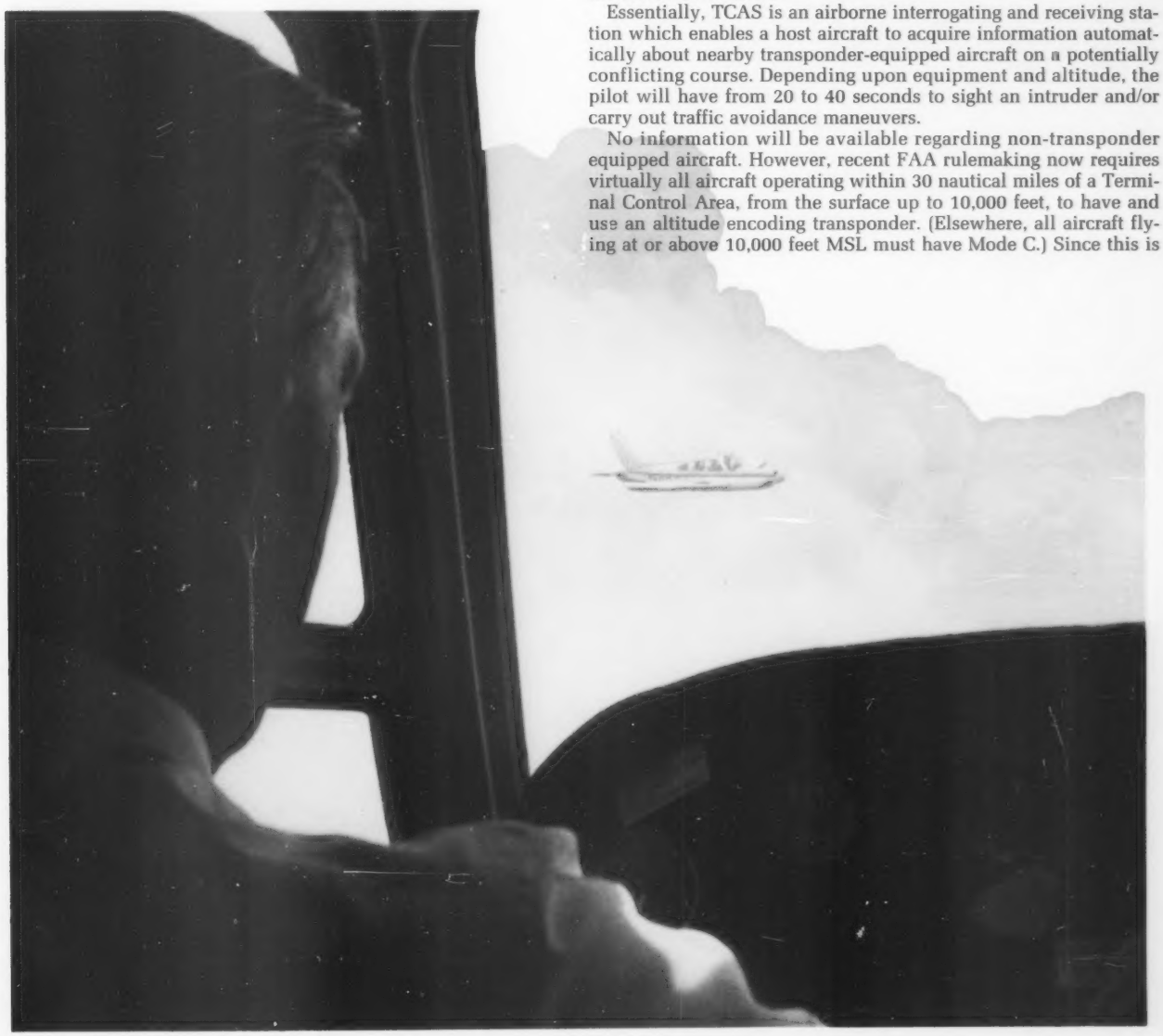
This summer, FAA has completed it's third and final evaluation of TCAS II, a "Traffic-Alert and Collision Avoidance System" now being produced by three manufacturers and starting to be ordered by major air carrier operators for fleet installation. Congressional legislation provides that no one may operate a large airplane with 30 or more passenger seats after December 30, 1991, unless it is equipped with approved TCAS II.

In view of the relatively short deadline, Congress is considering legislation that would permit a gradual phasing in of TCAS II installations over a three year period. This will be carried out at the discretion of the Administration.

What exactly is TCAS? How does it work, and how will it affect the future of aviation?

Essentially, TCAS is an airborne interrogating and receiving station which enables a host aircraft to acquire information automatically about nearby transponder-equipped aircraft on a potentially conflicting course. Depending upon equipment and altitude, the pilot will have from 20 to 40 seconds to sight an intruder and/or carry out traffic avoidance maneuvers.

No information will be available regarding non-transponder equipped aircraft. However, recent FAA rulemaking now requires virtually all aircraft operating within 30 nautical miles of a Terminal Control Area, from the surface up to 10,000 feet, to have and use an altitude encoding transponder. (Elsewhere, all aircraft flying at or above 10,000 feet MSL must have Mode C.) Since this is



Basic equipment, TCAS II.

Fig. I

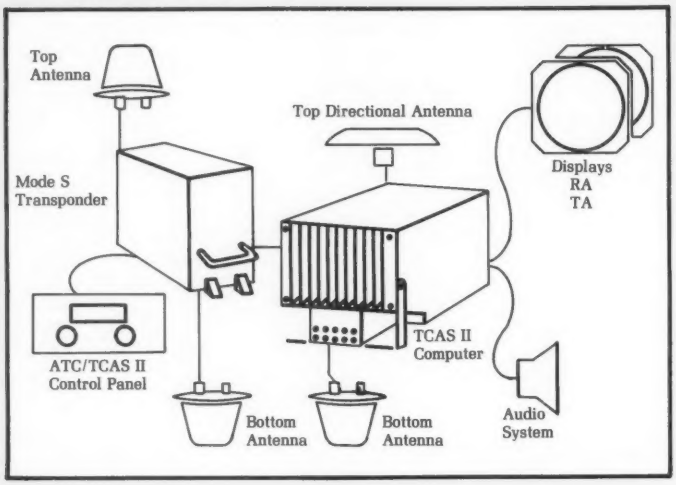


Fig. II

Protective airspace capsule showing traffic alert area (white jet) and Resolution Advisory range.

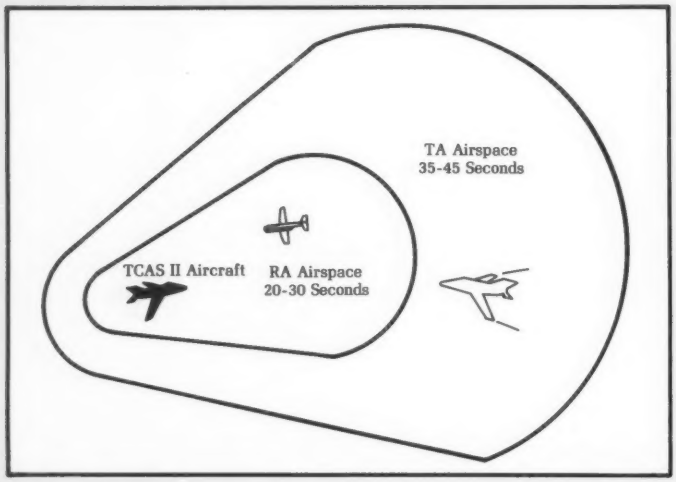
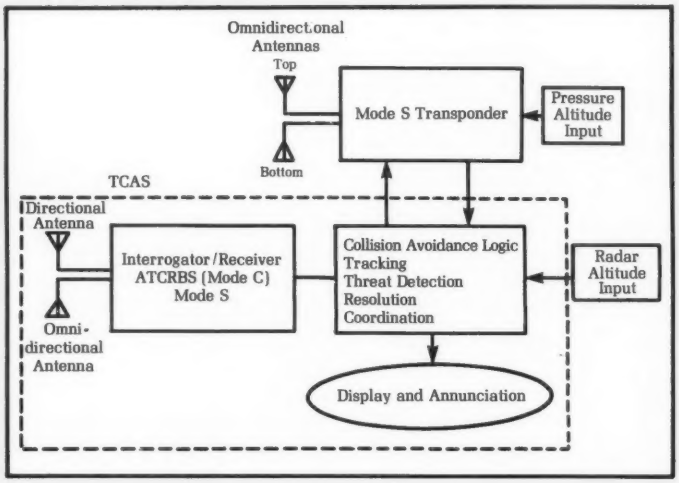
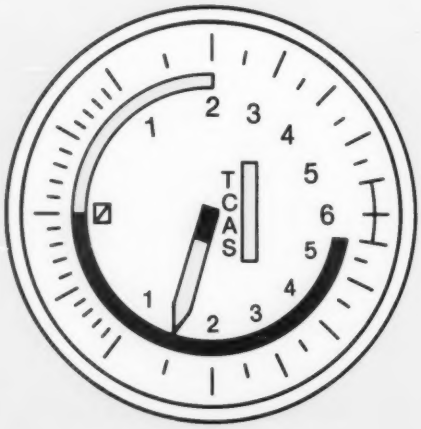


Fig. III

Traffic information flow chart.





Black section of arc, to be displayed in red, warns pilot against descent.

Fig. IV

FAA will consider the following modified installation schedule for TCAS II, in the event that Congress modifies the statutory mandate requiring this equipment on board the specified aircraft.

Date	Required equipage
December 30, 1990...	20% of all civil aircraft with more than 30 passenger seats operated by airlines who operate more than 30 such aircraft under the provisions of 14 CFR Parts 121 and 129.
December 30, 1991...	50% of all civil aircraft with more than 30 passenger seats operated by airlines under the provisions of 14 CFR Parts 121 and 129.
December 30, 1993...	100% of all civil aircraft with more than 30 passenger seats operating in the United States.

typically the body of airspace in which midair collisions, or near midair collisions, take place it is expected that TCAS will come close to eliminating such mishaps.

TCAS is designed to:

1) Require no ground-based equipment,
2) be adaptable to the needs of various airspace users,
3) be suitable for use in high density areas, and
4) be compatible with and a logical extension of the present air traffic control system.

There are three modular forms of TCAS. In order of increasing sophistication, they are known as TCAS I, TCAS II, and TCAS III. TCAS I is intended to serve the needs of general aviation, air taxis and commuter air carriers. As of December 31, 1995, it will be required equipment for all turbine-powered aircraft certificated to carry passengers or cargo for hire in the United States, and having a passenger carrying capacity of between 10 and 30 seats.

There are no existing regulations requiring TCAS for general aviation aircraft, or for non-turbine-powered aircraft, or any aircraft certificated for fewer than 10 passenger carrying seats. However, any traffic alert and collision avoidance system installed in a U.S. registered civil aircraft must be FAA approved. Any aircraft equipped with such a system shall have that system "on" and operating.

TCAS I is also required for rotorcraft in commercial (Part 135) use, with a configuration of 10 or more passenger seats.

The basic components of TCAS I are a transmitter/receiver unit capable of interrogating transponders; an altitude reporting transponder; a computer processor with software; a position/range/altitude of intruder display; and appropriate antennas.

The transponder may be the same unit already installed on the aircraft for interrogation by air traffic control. The display panel screen may display TCAS only, or it may be some existing screen such as one used to display weather radar returns, or electronic flight configuration data.

Primarily intended to assist the pilot in sighting nearby traffic, TCAS I will detect and display the range and approximate bearing of all transponder-equipped aircraft within four nautical miles of the host aircraft. If the traffic has an altitude reporting transponder (Mode A/C or Mode S), altitude of the proximate aircraft will also be displayed. By means of an aural and visual warning, TCAS I will alert the pilot to intruding aircraft within about 40 seconds of closure.

TCAS I does not offer the pilot any guidance for maneuvering away from potential collisions.

At the moment, FAA-approved TCAS I equipment is not available, since interested avionics manufacturers have concentrated their efforts on the soon to be required TCAS II.

Transponder Note: Two versions of air traffic radar transponders are currently used in civilian aircraft. The Mode A transponder response is limited to a four-digit identification code keyed in by the pilot. A negative reply will be given to altitude interrogation. Mode A/C, or simply Mode C as it is often called, includes the aircraft's altitude in the reply, as well as the I.D. The newest transponder type, Mode S, will reply to radar interrogations concerning I.D. and altitude—plus other information. Mode S radar interrogations may be addressed to specific aircraft via data link electronics.

TCAS II does everything TCAS I does, but offers greater accuracy and more information, provided by a Mode S transponder and a more sophisticated processor. TCAS II provides an airspace "capsule" within which all intruders will be displayed within 35 to 45 seconds of the time in which conflict might take place.

The protected area (See Figure II) is shaped somewhat like a tear drop. Although the distance between host and intruder at the time of alert will vary in accordance with relative closure speed, convergence, the time provided for sighting and evasive action will always be constant, thanks to continuous display via the sophisticated computations carried out by the TCAS computer.

Furthermore, TCAS II will offer a resolution advisory (RA), showing recommended vertical evasion maneuver if an intruder reaches a point within approximately 25 seconds of closure. The Mode S transponder in TCAS II will provide, in addition to altitude reporting , an air-to-air data link, making possible the automatic and instantaneous coordination of avoidance maneuvers where both aircraft are equipped with TCAS–II.

The heart of this equipment is its processor, which contains the hardware and software for connecting all components. The processor transmits and receives radio signals through the antennas, measures range, bearing and altitude of nearby traffic; determines potential conflicts, computes escape paths if necessary, and sends this information to the cockpit indicators.

If a conflict situation involves aircraft that are TCAS II or III equipped, their processors will automatically coordinate resolution advisories, with a continuous providing of information to the cockpit indicators. Red and green areas on an instantaneous vertical speed indicator will show which regions of vertical flight to avoid (red) and which can be flown safely (green).

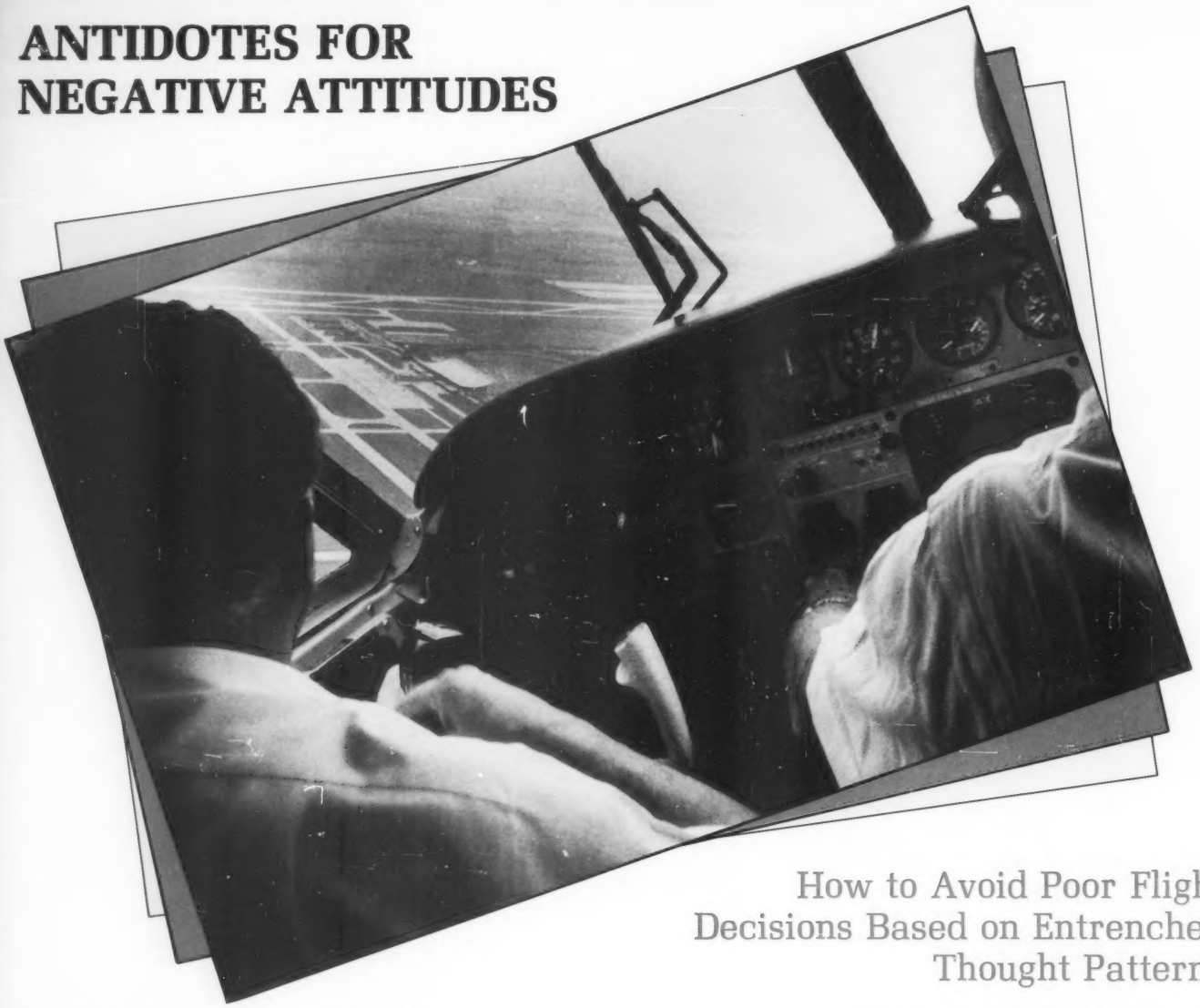
For TCAS II, resolution advisories will involve *vertical* maneuvering only. Note also that maneuvering information will be available only if the intruder has an altitude encoding transponder. As with all levels of TCAS, no intruder information can be provided for non transponder-equipped aircraft.

The display of resolution advisories involving horizontal maneuvering will only be available with TCAS III. Legislation and certification for this equipment has not yet taken place, and it is expected to be some years before production models can be built. This also applies to add-on equipment which would elevate already installed TCAS II to TCAS III.

However, TCAS II has been test flown by major airlines over many areas of the United States, including such high density traffic areas as the Los Angeles Basin. The consensus of pilot opinion is that this equipment will make an important contribution to the safety of air travel. ■

FAA Administrator James B. Busey, testing TCAS.

ANTIDOTES FOR NEGATIVE ATTITUDES



How to Avoid Poor Flight Decisions Based on Entrenched Thought Patterns

Editor's Note: This article was adapted from the publication, "Aeronautical Decision Making—Student and Private Pilots" (report number FAA/PM-86/41), with the assistance of Jeff Roy, Accident Prevention Coordinator for the New England Region.

For every flight maneuver, there is an appropriate aircraft attitude, as we all know. For every flight situation, there is an appropriate *pilot attitude*, which also affects flight safety. However, some pilots have *fixed attitudes*, which trigger automatic responses that may be very inappropriate and lead to decisions that are unsafe.

Such fixed attitudes are often based on an underlying fear. For example, a pilot who realizes he will be landing far beyond the normal touchdown point may not go around simply because he is afraid someone may see what he is doing and consider him an unskilled pilot.

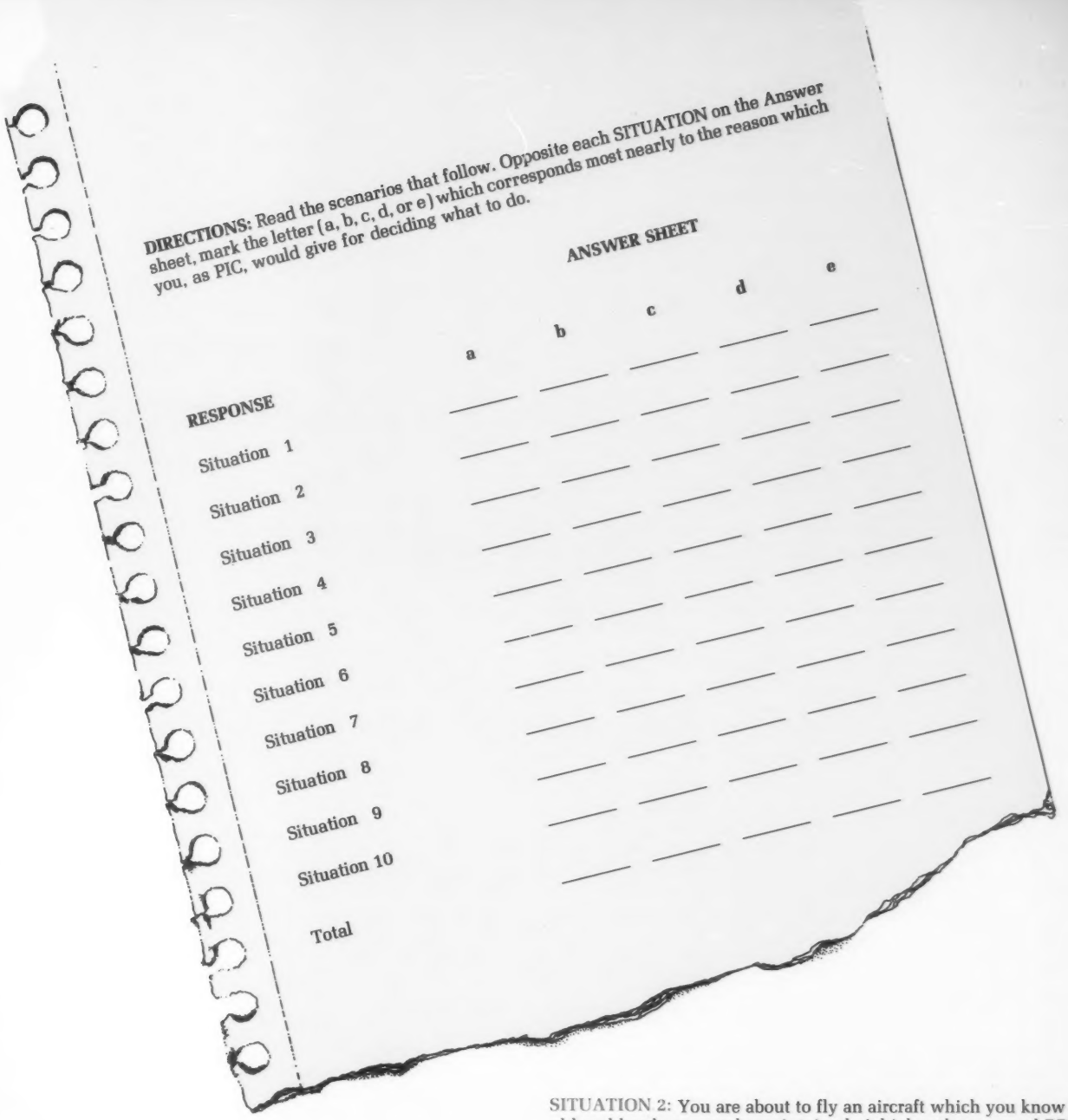
Similarly, a pilot might habitually prefer to go ahead with a flight when the weather is marginal, in order to suppress some inner doubts about has ability to handle instrument conditions. Pilots who habitually disregard established safety practices may be responding to an inner fear about losing their independence. On the other hand, pilots who fail to respond to a situation that requires individual initiative may fear being blamed if their efforts turn out to be unsuccessful.

The "Judgement Training Manual", a study undertaken by FAA, Transport Canada, and the General Aviation Manufacturer's Association, concluded that there are five principle hazardous thought patterns, or attitudes, which are of special concern to pilots. To some extent, most of us are influenced occasionally by these kinds of automatic thought patterns, usually without being aware of them—perhaps because the patterns were formed in early life as a protection against apprehensive feelings. As pilots, these attitudes can cause us and others serious harm. In order to free ourselves from their domination, we need to be able to recognize their presence.

Discovering Your Own Weaknesses

The first step toward de-activating these negative mind sets is to discover which of the common five hazardous thought patterns tend to influence our decisions. The following questions are part of a Self-Assessment Profile developed for the Judgement Training Manual cited above. Ten "SITUATIONS" are presented, each with five possible reasons for the decision taken by the pilot.

DIRECTIONS: Read the scenarios that follow. Opposite each SITUATION on the Answer sheet, check off the space under the reason identifier letter (a, b, c, d, or e) which corresponds most nearly to the reason you, as PIC, would given for deciding what to do. Even though you may feel that you would not ordinarily have made some, or any, of the PIC decisions given, assume that you did so.



DIRECTIONS: Read the scenarios that follow. Opposite each SITUATION on the Answer sheet, mark the letter (a, b, c, d, or e) which corresponds most nearly to the reason which you, as PIC, would give for deciding what to do.

ANSWER SHEET

RESPONSE	a	b	c	d	e
Situation 1					
Situation 2					
Situation 3					
Situation 4					
Situation 5					
Situation 6					
Situation 7					
Situation 8					
Situation 9					
Situation 10					
Total					

SITUATION 1: You are forty minutes late for a trip in a small airplane, and since the aircraft handled well on the previous day's flight, you decide to skip most of the preflight check. What leads you to this decision?

a. If any problems develop, the responsibility would not be yours. It is the maintenance of the airplane that really makes a difference.
b. You feel that your reputation for being on time demands that you cut corners when necessary.
c. You see no reason to think that something unfortunate will happen during this flight.
d. You simply take the first approach for making up time that comes to mind.
e. You believe that some of the preflight inspection is just a waste of time.

SITUATION 2: You are about to fly an aircraft which you know is old and has been poorly maintained. A higher than normal RPM drop on the magneto check is indicated, and you suspect the sparkplugs. However, your friends, who are traveling as passengers, do not want to be delayed. After five minutes of debate, you agree to make the trip. Why do you permit yourself to be persuaded?

a. You feel that your opinion may be wrong since none of the passengers seem to feel there is any risk.
b. You feel that it is important to prove your ability as a great pilot, even under less than ideal circumstances.
c. You think that the sparkplugs will certainly last for just one more flight.
d. The thought of changing all the flight and travel arrangements is too annoying. So you jump at the suggestion of the passengers.
e. You believe that regulations over-stress safety in this kind of situation.

SITUATION 3: You are on final approach, when you notice a large unidentified object on the far end of the runway. You consider going around, but your friend suggests landing anyway since the runway is "plenty long enough". You land, stopping barely 25 ft. short of the obstacle. Why did you agree to land?

a. You are pleased to have someone else help with the decision and decide your friend is right.
b. You want to show your friend that you can stop any airplane as quickly as needed.
c. You have never had an accident, so you feel that nothing will happen this time.
d. You do not have much time, so you just go ahead and act on your friend's suggestion.
e. You feel that the FAA regulations making the pilot responsible for the safe operation of the aircraft do not apply here since it is the airport's responsibility to maintain the runway.

SITUATION 4: You have just completed your base leg for a landing on runway 15 at an uncontrolled airport. As you turn on final, you see that the wind has changed, blowing from about 90 degrees. You make two sharp turns and land on runway 11. What was your reasoning?

a. The unexpected wind change is a bad break, but you figure if the wind can change, so can you.
b. You believe that a really good pilot can safely make sudden maneuvers.
c. You know there would be no danger in making the sudden turns because you do things like this all the time and never had a problem.
d. You know landing into the wind is best, so you act as soon as you can to avoid a crosswind landing.
e. You believe your flight instructor was overly cautious in insisting that a pilot must go around rather than make sudden course changes while final landing.

SITUATION 5: You have flown to your destination airfield only in daylight but believe that you know it well. You learn that your airplane needs a minor repair which will delay your arrival until well after dark. Although a good portion of the flight will be after dark, you feel that you should be able to recognize some of the lighted landmarks. Why did you decide to make the flight?

a. You believe that when your time comes you cannot escape, and until that time there is no need to worry.
b. You feel that if anyone can handle this problem, you can do it.
c. You simply do not believe that you could get off course despite your unfamiliarity with ground references at night.
d. You do not want to wait to study other options, so you carry out your first plan.
e. You believe that the repair is not necessary. You decide you will not let recommended, but minor, maintenance stop you from getting to your destination as planned.

SITUATION 6: You are on a flight to an unfamiliar, rural airport. Flight service states that VFR flight is not recommended since heavy coastal fog is forecast to move into the destination airport area about the time you expect to land. You first consider returning to your home base where visibility is still good but decide instead to continue as planned and land safely after some problems. Why did you reach this decision?

a. You reason that since your actions would make no real difference, you might as well continue.
b. You hate to admit that you cannot complete your original flight plan.
c. You feel sure that things will turn out safely that there is not danger.
d. You feel the need to decide quickly so you take the simplest alternative.
e. You resent the suggestion by flight service that you should change your mind.

SITUATION 7: While taxiing for takeoff, you notice that your right brake pedal is softer than the left. Once airborne, you are sufficiently concerned about the problem to radio for information. Since strong winds are reported at your destination, an experienced pilot who is a passenger recommends that you abandon the flight and return to your departure airport. You choose to continue the flight and experience no further difficulties.
Why did you continue?

a. You feel that you can leave the decision to the tower at your destination.
b. You are sure that if anyone could handle the landing, you can.
c. Your brakes have never failed before, so you doubt that they will this time.
d. You immediately decide that you want to continue.
e. You feel that suggestion made in this type of situation are usually overly cautious.

SITUATION 8: Your regular airplane has been grounded because of an airframe problem. You are scheduled in another airplane and discover it is a model you are not familiar with. After your preflight you decide to takeoff on your business trip as planned. What was your reasoning?

a. You tell yourself that if there were any danger, you would not have been offered the plane.
b. You are in a hurry and do not want to take the time to think of alternate choices.
c. You feel that a difficult situation will not arise so there is no reason not to go.
d. You are in a hurry and do not want to take the time to think of alternate choices.
e. You are convinced that your flight instructor was much too conservative and pessimistic when he cautioned you to be thoroughly checked out in an unfamiliar aircraft.

SITUATION 9: You were briefed about possible icing conditions but did not think there would be any problem since your departure airport temperature was 60°F. As you near your destination, you encounter freezing precipitation, which clings to your aircraft. Your passenger, who is a more experienced pilot, begins to panic. You consider turning back to the departure airport but continue instead. Why did you not return?

a. You feel that having come this far, things are out of your hands.
b. You do not want the passenger to think you are afraid.
c. You do not believe that the icing could cause your plane to crash in these circumstances.
d. The panic of the passenger makes you "commit yourself" without thinking the situation over.
e. You are determined not to let the passenger think he can influence what you do.

SITUATION 10: You do not bother to check weather conditions at your destination. En route, you encounter headwinds. Your fuel supply is adequate to reach your destination, but there is almost no reserve for emergencies. You continue the flight and land with a nearly dry tank. What most influenced you to do this?

a. You reason that the situation has already been determined because the destination is closer than any other airport.
b. You do not want your friends to hear that you had to turn back.
c. You believe that all things usually turn out well, and this will be no exception.
d. Being unhappy with the pressure of having to choose what to do, you make a snap decision.
e. You feel that flight manuals always understate the safety margin in fuel tank capacity.

? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ?

PLACE
STAMP
HERE

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9371

Superintendent of Documents

Order Processing Code:
*6654

Please enter my subscription for FAA AVIATION NEWS (FAN).

1. The total cost of my order is $_____ . All prices include p

Please Type or Print

2. _____
(Company or personal name)

_____
(Additional address/attention line)

_____
(Street address)

_____
(City, State, ZIP Code)

(_____) _____
(Daytime phone including area code)

4. **Mail To:** Superintendent of Documents, Government Printing

DETACH ENVELOPE HERE

ENCL

ents Subscriptions Order Form

Charge your order. It's easy!

AN). One year $ 6.50 ($8.15, foreign)
Two years $13.00 ($16.30, foreign)

ude postage and handling and are subject to change.

3. Please choose method of payment:

- ☐ Check payable to the Superintendent of Documents
- ☐ GPO Deposit Account ☐☐☐☐☐☐☐-☐
- ☐ VISA, CHOICE or MasterCard Account

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

(Credit card expiration date)

Thank you for your order!

(Signature) 5/89

rinting Office, Washington, D.C. 20402-9371

ENCLOSE FORM WITH CHECK OR MONEY ORDER (Do not send cash)

TAKING SCORE: Now that you have made your selections, total the number of checks in each column. The column with the most checks indicates your predominant pattern of attitudinal thinking. The following discussion explains the types of thoughts that are associated with each letter group.

What Lies Behind the Attitudes

Group a. **Resignation.** If more of your checks were in Column a than in any of the other columns, you have a tendency to avoid making difficult choices or accepting responsibility. People who resign themselves ("What's the Use?") to the apparently inevitable, do not see themselves as making a great deal of difference in what happens to them. When things go well, they think, "That's good luck." When things go badly, they attribute it to bad luck or feel that someone is "out to get them." They leave the action to others—for better or worse.

Sometimes such individuals will even go along with unreasonable or unsafe requests just to be a "Nice Guy." They may abdicate their PIC authority rather than risk taking an unpopular or unorthodox course of action.

Group b. **Macho.** People who are always or often trying to prove that they are better than anyone else think, "I can do it if anyone can!" They must always "prove" themselves by taking risks and by trying to impress others. While this pattern is thought to be a male characteristic, women are equally susceptible.

Group c. **Invulnerability.** Many people feel that accidents happen to others but never to them. They know accidents can happen, and they know that anyone can be affected; but they never really feel or believe that they will be the one involved. Pilots who think this way are more likely to take chances and run unwise risks, thinking all the time, "It won't happen to me!" They secretly believe they have a guardian angel.

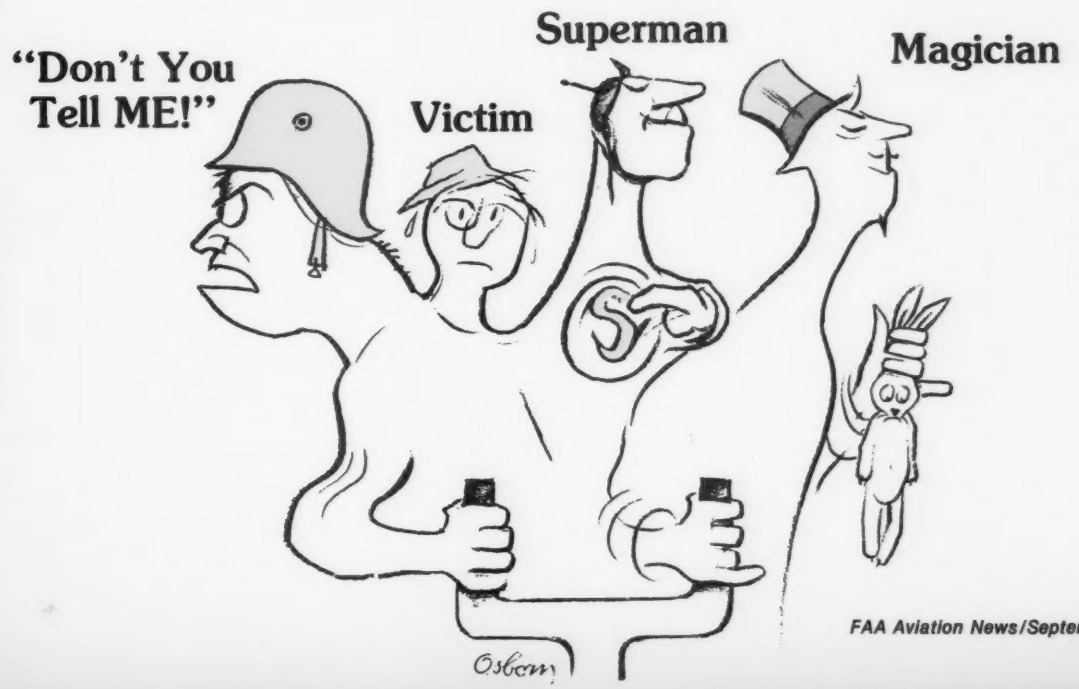
Group d. **Impulsiveness.** This is the thought pattern of people who frequently feel the need to "Do something—quickly!" Anything, immediately. They do not stop to think about what they are about to do; there is never time to select the best alternative—they just do the first thing that comes to mind.

Group e. **Anti-Authority.** This thought is found in people who do not like anyone telling them what to do. They think, "Don't tell me!" In a sense, they are saying, "I'm not a kid. No one can tell me what to do." Such pilots may either be resentful of having someone tell them what to do or may just regard rules, regulations, and procedures as silly or unnecessary. They may have had a very rigid education or upbringing. It is always a pilot's prerogative to question authority when it appears to be in error, but an anti-authority attitude is something else.

This inventory *does not* say that you are *bound* to act in accordance with one or more of these hazardous thoughts, but that you have a tendency to do so. Having thoughts generated by strong feelings is common and normal, but feeling obliged to act on them can lead to an accident. A critical part of your development and training as a pilot is to learn to recognize, in order to control, hazardous attitudes. ■

SUGGESTION: On a blank sheet of paper, list the five negative attitudes in a column, in declining order of your susceptibility to them. Devise an appropriate positive attitude, or "antidote," like the ones listed below.

Negative Attitude	Antidote
Anti-Authority (Don't tell me what to do.)	Someone is trying to help me. The rules are based on a lot more experience than I have.
Impulsive (I have to do something quickly.)	Is there something I don't want to know, or see? What is the hurry, really?
Invulnerability (It won't happen to me.)	Am I really Superman? Fantasies can be dangerous.
Macho (I can do anything with an airplane)	Dead pilots are not pilots.
Resignation (What's the use?)	By thinking, I can make a difference. How would I feel if I were on board the DC–10 that lost all hydraulic controls over Iowa, and the captain had announced, "Sorry folks. Nothing I can do."



TRANSPONDER ALTITUDE VERIFICATION

Instrument Maintenance a Key Factor in Deriving Benefits of Mode C

Editor's Note: The Brief on this subject appearing in the May/June 1989 issue of FAA AVIATION NEWS is incorrect, and should be disregarded. The following discussion is intended to help new users of Mode C (Altitude Encoding) Transponders understand how the equipment works, its function in assisting safe air traffic separation, and the means by which its accuracy is maintained.

Many thousands of pilots have recently begun utilizing Mode C transponders in VFR flight, as required by law. July 1, 1989 was the effective date for certain portions of recent amendments to Part 91 of the Federal Aviation Regulations concerning the altitude encoding transponder (Mode C). This equipment must be installed for all en route operations at or above 10,000 feet mean sea level, except when below 2,500 feet above ground level, and for all flight within 30 nautical miles of a terminal control area primary airport.

Much of our VFR flying is done without radio contact between the pilot and air traffic control. However, the required use of Mode C transponders in areas frequented by air carrier aircraft will enable controllers to "see" the altitude, as well as the position, of unidentified aircraft in sectors where they are providing radar traffic separation for air carriers and other IFR traffic. This will not only help controllers expedite the flow of traffic but will decrease the potential for traffic conflicts.

However, many new users of Mode C have an incomplete understanding of how the instrument functions; and of their role in assuring its accuracy at all times.

For example, some pilots have the impression that their Mode C transponder will always have the same altitude readout as their panel altimeter. This is obviously untrue: many transponders derive their altimetry from a separate pressure sensing source which is not visible to the pilot. Furthermore, the transponder itself could malfunction, although such occurrences are rare.

The transponder-displayed altitude of uncontrolled aircraft is read by controllers to determine if and when traffic advisories should be issued to pilots of aircraft which are in contact with an ATC facility. An erroneous transponder altitude reading from an uncontrolled aircraft could give the controller and the pilot a false sense of security.

For aircraft on instrument flight plans or otherwise under air traffic control, the controller will, on initial contact, compare the transponder altitude readout with the pilot-reported altitude. If there is any significant discrepancy the pilot will be notified and appropriate action taken by ATC. But this information is not provided for aircraft NOT under air traffic control.

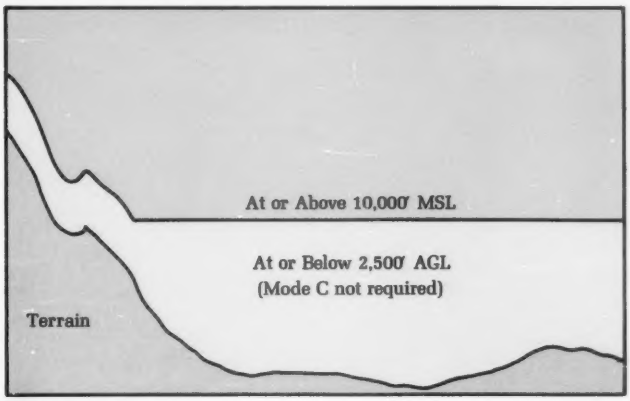
VFR pilots who are receiving ATC traffic advisories may request an altitude crosscheck, but this may only be provided when the controller's workload permits—it is not a routine service.

Our increasing dependence upon Mode C for traffic aircraft separation underscores the importance of aircraft equipment maintenance, which in the last analysis is the responsibility of the pilot in command. The regulations require that no transponder remain in service longer than 24 months without undergoing removal from the aircraft and inspection by a certificated repair station.

An aircraft is qualified for IFR flight in controlled airspace only if the pressure sensing systems which provide its barometric information are similarly inspected. Pilots of VFR aircraft requiring Mode C transponders are advised to have similar maintenance performed upon their pressure sensing systems, and to be watchful, during preflight inspections, for dirt adhering to the fuselage which might block static ports, and thereby interfere with pressure sensing.

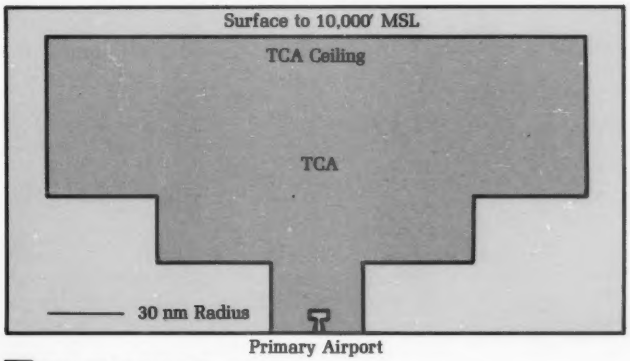
Finally, pilots are reminded that neither Mode C nor any automated device we can invent to improve air safety will allow us to become lax about scanning in flight for other aircraft or ground obstructions. The pilot's eyes are still the basic guardian of the airspace. ■

ENROUTE FLIGHT



Mode C Required

TERMINAL CONTROL AREA



TCA Veil (Mode C Required)

TCA (Requires Mode C Transponder, Two-way Radios, and ATC Approval)

Mode C in TCA Veils

On June 16, 1989, FAA published a denial to a petition filed by the Aircraft Owners and Pilots Association (AOPA), the Experimental Aircraft Association (EAA), and the Helicopter Association International (HAI). This petition, which sought to reduce the area commonly known as the Mode C Veil (the area surrounding a TCA within a 30 mile radius of the TCA primary airport), within which aircraft are now required to be equipped with a Mode C Transponder.

However, in view of the fact that the petition denial was published only 14 days before the effective date of the rule requiring Mode C transponders within this area, a limited transition period has been established. Accordingly, aircraft operators who have ordered or purchased Mode C equipment but have not been able to have the equipment installed, may be authorized to operate within a specified Mode C Veil (but not within the TCA itself) for a given period of time without the altitude encoding transponder.

To request an ATC authorization of this nature, aircraft operators should telephone the appropriate ATC facility listed below, Monday through Friday, between the hours of 9:15 a.m. and 3:00 p.m. local time. REQUESTS WILL NOT BE ACCEPTED ON ATC RADIO FREQUENCIES.

Operators must provide the aircraft identification(s) and type(s), operator's name and daytime telephone number, reason for the request, and if appropriate, the expected date to be in compliance with the rule. Each ATC facility may grant authorization only within its specific TCA Veil, and will assign the operator a code number for each authorization. Unless specifically required, operators need not establish two-way radio contact with the ATC facility while conducting such authorized flights. The transition period is not expected to exceed 90 days.

Authorization under this policy may also be granted for flight operations conducted to, from or at airports on the fringe of a TCA Veil, in areas without radar coverage, or in aircraft not configured to handle to required equipment.

Initial authorizations may be given orally; however, authorizations responding to a long term need will be issued in writing.

TCA Veils and Telephone Numbers

Atlanta, GA	(604) 669-1203
Boston, MA	(617) 567-6622
Chicago, IL	(312) 601-5540
Cleveland, OH	(216) 265-4800
Dallas/Fort Worth, TX	(214) 453-4214
(Must use area code for all calls to Dallas/Fort Worth)	
Denver, CO	(303) 355-1610
Detroit, MI	(313) 942-3349
Honolulu, HI	(808) 836-1761
Houston, TX	(713) 443-1333
Kansas City, MO	(816) 243-3855
Las Vegas, NV	(702) 388-6559
Los Angeles, CA	(213) 215-2040
Miami, FL	(305) 526-2648
Minneapolis, MN	(612) 725-4417
New Orleans, LA	(504) 466-9746
New York, NY	(516) 683-2910
Philadelphia, PA	(215) 492-4100
Pittsburgh, PA	(412) 269-9247
St. Louis, MO	(314) 427-4932
San Diego, CA	(619) 557-6545
San Francisco, CA	(415) 273-6005
Seattle, WA	(206) 764-6614
Washington, DC	(202) 557-2861

Bathing the Birdie

Why Aircraft Cleanliness is Next to Airworthiness

The general consensus is that washing your aircraft, as with washing your car or pet, is just another chore that needs to be done and has no particular value except for getting these items clean. Wrong! If you have the right attitude, giving your aircraft a bath will also give you a chance to inspect it more closely than normal and perhaps save yourself from some future problems.

The best things to use on the rubber, metal, or fabric parts of an aircraft are ordinary water and detergent, as soap tends to leave a film. Use a brush that scrubs without scraping or tearing, and plenty of water for rinsing. Washing will not only remove dirt and chemicals which favor corrosion and deterioration, but it also enables you to see what is being obscured by dirt, oil, grease, etc. A diagnostic attitude while you are cleaning your aircraft can be rather eye opening.

As everyone knows paint is the outer skin of the airplane. Although no more than a few millimeters thick, the paint acts as a barrier keeping corrosion out—not unlike the skin keeping infection out of the human body. The main problem with corrosion is that the gradual breakdown of the metal is often a camouflaged process. Once the outer skin has been pierced, corrosion can travel extensively underneath, mostly invisible on the surface. This could lead to an unsuspected in-flight structural or mechanical failure.

There are various types of corrosion. Direct or chemical corrosion can get a start in either an unobtrusive or very obvious way. In areas of the country where there is significant industrial pollution or where smog or dampness are prevalent, the air contains impurities which will imperceptibly coat the aircraft. What you think is just plain old dirt may contain metallic salts. Both kinds of impurities are guaranteed to start the breakdown process if allowed contract with the metallic skin or structure of the aircraft.

There are more obvious forms of chemical corrosion like a caustic liquid or gaseous agent, such as battery acid or undiluted cleaning agents, which are quickly destructive when they directly contact metal. These can also destroy the painted surface of the aircraft.

Another type of corrosion, Galvanic, is brought about by the exchange of electrons between two dissimilar metals (for example, copper fastening on a steel structure). Since a metal aircraft is made up of steel, brass, and copper, as well as aluminum, care is usually taken that such a thing does not happen. Even aluminum alloys are at risk if they are sufficiently dissimilar. That is why aluminum alloy rivets are color-coded and punch-coded to make certain they are metallurigically compatible to the structures they support.

Despite these precautions, all it takes is one possible pathway for the electrons for corrosion to take place. Washing the outer skin of your aircraft provides you with an opportunity make a thorough inspection of the paint job for possible weaknesses and gives the added plus of increasing the durability of the paint.

Another area susceptible to deterioration are the rubber parts, including the tires, on the aircraft. The presence of hydrocarbons, especially fuel, oil, and hydraulic fluids, tend to break down the rubber—natural rubber more rapidly than synthetic. However, regular cleaning trends to extend its lifespan. Another advantage of frequently washing your aircraft is that any discharges of oil or fluids are quickly noticed and more easily watched for abnormal amounts.

Plastic windows also need special care. If plastic window cleaner is not available use mild soap and water—never use regular window sprays and cleaners. Gasoline, alcohol, benzine, or acetone should be avoided as many plastics are partially soluble. They are also easily scratched, so if a cloth is used make sure it is free of dirt or grit. Otherwise you could find yourself peering through a maze of scratches in your windshield.

By the way, the friction of dry cloth dusting a plastic window will build up a dust-binding electrostatic charge and a frustrating experience, as more dust is attached to the window—washing is the only practical option.

Washing your aircraft can be as much of a chore as you want it be; having a definite purpose will sometimes made it easier. Of course, the question still remains as to how often the aircraft should be washed. If you operate your aircraft in a coastal or an industrial area, every day might be ideal, but impractical. In unpopulated or desert areas the answer might be once a year. The only real answer is to use your common sense. ■

The Unsung Heroes Who Brought Aviation to Life in America

One of the great puzzles of aviation history is the decline and neglect of the airplane in the United States that occurred during the 12 year period following the "Miracle at Kitty Hawk" in 1903. Despite the persistence of such pioneering giants as the Wright brothers and Glenn Curtiss, it was difficult to get anyone in this country stirred up about the commercial prospects of flying machines.

For one thing airplanes were far from cheap. Only the very rich could afford the price tag, which ran as high as $5,000 to $7,500 for a Wright *Flyer*. When Americans bought an airplane it was more out a desire for thrills or public notoriety than for any business prospects.

Even the War Department, after the initial excitement about flying machines subsided, maintained only a "one-man, one-plane air force" in 1910 (consisting of Lieutenant Benjamin Foulois and a *Flyer* for which he sometimes had to buy fuel out of his own pocket). It would not be until 1914, with war brewing in Europe, that Congress would pass a law to provide permanent personal for a small Aviation Section in the Signal Corps. Even after aircraft and pilots were used to assist the U.S. "Punitive Expedition"—sent into Mexico in 1916 to subdue the activities of Pancho Villa—there was little positive reaction. The underpowered JN-2's used for this expedition had trouble coping with the high mountainous terrain in northern Mexico, and generally were of little value for intelligence gathering.

In Europe, on the other hand, the development of aviation, following demonstrations by the Wrights, moved rapidly ahead. Accustomed as the Europeans were to living on the verge of war, the major powers were always on the lookout for weapons that would give them an edge in combat and topple the balance of power in their favor. By the time World War I broke out in 1914, England, France, Germany, and Italy had spent millions of dollars building up combat squadrons, which promptly went into action.

On April 6, 1917, the United States entered the war. Of the 224 airplanes the U.S. Army had acquired over the past eight years, only 55 were still in commission and all were used as trainers. General Pershing summed up their condition as "51 obsolete and 4 obsolescent."

It would take another three months before Congress would realize the importance of military aviation. At this point the staggering sum of $640 million was appropriated to meet the demands of our hard-pressed allies for pilots and airplanes. However, getting the money was the easy part; the French alone wanted 4,500 airplanes, with trained combat personnel, sent overseas at a rate of 2,000 airplanes a month. A somewhat impossible feat for a country that had only produced about a 1,000 airplanes since the days of Kitty Hawk.

Aircraft manufacturers in this country had gone little beyond the early Wright and Curtiss designs. The use of pusher planes were banned by the Army because of the dangerous location of the engine—it had a tendency to break loose during crash landings and crush the pilot. Curtiss was one of the few manufacturers who had a new design to offer—the JN series, better known as the *Jenny*—and an aircraft factory capable of fulfilling sizable government contracts, but not for the number required. Others chosen for government contracts were the Morse *Scout* and the Standard E-I.

However, as with the *Jenny*, they would remain in this country as trainers, since they lacked the speed and agility considered necessary for combat planes. European designs were brought to the United States and mass-produced. By April 1918, when the first American air units were ready for combat, the pilots were equipped with airplanes purchased from French, British, or Italian manufacturers and had to be retrained on the front. Aircraft production in the U.S. had been stepped up as requested, but the deHavilland DH-4 (a British design) was the only U.S. built airplane to used as a war machine—1,213 would reach Europe out of the nearly 5,000 airplanes built.

In the meantime the U.S. Post Office was requesting funds to start an air mail service. After much discussion Congress was convinced that flying air mail routes would be excellent training for military pilots. In February of 1918 the War Department agreed to furnish airplanes, pilots, mechanics, and the Washington, DC, landing strip, if the Post Office provided clerical staff, fuel, and landing strips in Philadelphia and New York City. This arrangement was only projected for six months.

Surprisingly, the experiment succeeded without any fatalities or major injuries—almost a miracle when you consider the pilots' inexperience, the difficult weather conditions, and the unreliable navigation instruments. Congress then approved the purchase of six new *Jennies* and the hiring of four civilian airmen to continue the service. Air mail advocates soon had visions of a nationwide network of air mail routes.

With the war's end on November 11, 1918, the number of trained pilots in the U.S. had jumped to over 10,000 (about 9,000 never saw combat). The Government unexpectedly found that another 5,000 airplanes were manufactured before the wartime order was cancelled, resulting in a fleet of about 15,000 units. The Post Office upgraded their air mail fleet from this surplus with the more powerful deHavilland DH-4 with a 400 horsepower engine and foresaw their ranks swelling with ex-military pilots. The remainder of the airplanes were sold back to various manufacturers to be overhauled for civilian use.

The former military pilots were not willing to settle down to a humdrum existence after they had experienced the freedom of the air. Looking for flying opportunities, some were more than willing

(continued on back page)

NEW AND IMPROVED. A Museum of Flying has opened at the Santa Monica (CA) Airport to serve as a living monument to the nation's aviation history. The new museum originated from the Donald Douglas Museum and Library, which has been expanded to show the strong correlation between technology and the dominant personalities in aviation's history. The museum will contain indoor and outdoor exhibits encompassing a wide range of aircraft from a Douglas *World Cruiser* to the P-51 *Mustang* shown in the photo.

GENERAL AVIATION FLIGHT RULES REVISED

An amendment to FAR Part 91, signed into law on August 7, reorganizes and realigns the General Operating and Flight Rules to make them more understandable and easier to use.

To facilitate understanding the many section changes, a cross-reference of old and new numbers was published in the August 18, 1989, Federal Register and is available free to the public by writing to FAA, APA-230, 800 Independence Ave., SW, Washington, DC 20591. Most sections of the amendment will not go in effect until August 18, 1990, to allow time for operators and flight schools to change their curriculum and teaching accordingly. The only exception is §91.203(a)(2) which becomes effective September 18, 1989, but remains numbered as §91.27(a)(2) until August 18, 1990.

The Part 91 amendment contains four substantive changes:

(1) FAR §91.117 allows reciprocating-powered aircraft to be operated at 200 knots in an airport traffic area.

(2) FAR §91.135 allows operators desiring authorizations to deviate from positive control area and route segment requirements to utilize a 48-hour oral notification system.

(3) FAR §91.409 allows operators of turbine-powered rotorcraft to use an alternate inspection program, such as an FAA-approved inspection program.

(4) FAR §91.205, 91.509, and 91.511 define "shore" as it is used in these sections to exclude tidal flats.

The one immediately effective change, §91.27(a)(2) which becomes §91.203(a)(2) , concerns the operation of an aircraft outside the U.S. without an original certificate. Only a telex copy of the Certificate of Aircraft Registration may be used as a temporary certificate. (The telephone number for the Aircraft Registry given in our July/August issue is not longer correct. It is now 405-680-3116.)

Those publications affected by this amendment may be revised during their normal publication cycle, even if this falls after the amendment's effective date. The only exceptions to this are those publications and procedures that are affected by the four changes mentioned and FAR §91.203(a)(2). In this case, the revisions must be made by the effective date of each section.

PILOT LISTENING SESSIONS

Pilot concerns over the manner in which FAA's compliance and enforcement programs for general aviation are being carried out will be investigated this autumn by means of a nationwide review and a follow-up of specific complaints.

In announcing this "System Safety and Efficiency Review," Secretary of Transportation Samuel K. Skinner commented, "there is some feeling among the pilot community that FAA is too focused on punishing violators and not focused enough on working with private and business pilots. If that's true, we want to change it."

Listening sessions, open to the public, are being held across the nation. Dates and places for remaining sessions this fall are:

9/7 - 7:00 p.m. Park Ridge Marriott,Park Ridge, NJ

9/26 - 7:30 p.m. Ramada Inn - Southeast Kansas City, MO

9/27 - 7:30 p.m. Sheraton - North Shore Inn,Northbrook, IL

9/28 - 7:30 p.m. Holiday Inn,Harvey, IL

10/5 - 10:00 - 12:00 p.m. NBAA Convention,Georgia World Congress Center, Atlanta, GA

10/20 - 11:00 - 12:30 a.m. AOPA Convention, Buena Vista Palace Hotel Lake Buena Vista, FL

VALIDITY OF AFR'S, BFR'S, STUDENT SOLO ENDORSEMENT

In response to pilots' concerns regarding the scheduled timing for recently enacted regulations applicable to low-time private pilots and pre-solo student pilots, the following guidelines will apply:

- Biennial flight reviews taken prior to August 31, 1989, are valid for the normal 24 calendar months for all pilots.
- For non-instrument rated private pilots with fewer than 400 hours of pilot flight time, a flight review which expires on or after August 31, 1989, must be renewed by means of an *annual* flight review (AFR), valid for 12 calendar months from the date of issue.

However, if the pilot exceeds 400 hours of flight time or obtains an instrument rating or a commercial pilot certificate, prior to expiration of the AFR, the flight review automatically will be considered a BFR, valid for 24 calendar months.

- Student pilot solo endorsements in effect on August 31, 1989, will remain valid until their normal expiration date or on December 31, 1989 (whichever comes first). This ensures that student pilots endorsed for solo will have up to 90 days to prepare for the pre-solo written test now required by revised §61.87(b).

Spot amendments clarifying some of the student pilot, recreational pilot, and private pilot requirements have been published in the *Federal Register*. To obtain a copy of the Notice of Proposed Rulemaking on Pilot, Flight Instructor, and Pilot School Certification Rules (Docket No. 25910), contact FAA, APA-230, 800 Independence Ave., SW, Washington, DC 20591, telephone (203) 267-3484.

UPDATING REPAIR STATION RULES

Public meetings are being scheduled this fall and winter to discuss a possible revision of Federal Aviation Regulation Part 145, concerning a broad range of rules applicable to repair stations. Part 145 was recodified in 1962 and since that time very few substantive change have been made which reflect the current state-of-the-art. The meetings will be held between 9 a.m. and 4 p.m. with registration beginning at 8 a.m. each day. The scheduled locations are as follows:

October 24 and 25, 1989. FAA Headquarters Building, third floor auditorium, 800 Independence Ave., SW, Washington, DC.

November 7 and 8, 1989. Fort Lauderdale Airport Hilton, 1870 Griffin Road Dania, FL.

November 28 and 29, 1989. Holiday Inn D/FW Airport North, 4441 Highway 114 & Esters Boulevard, Irving, TX.

December 12 and 13, 1989. Amfac Hotel, San Francisco International Airport, 1380 Old Bayshore Highway, Burlingame, CA.

• Weak Links

Tex Melugin's article in the March/April 1988 issue (Legal but Unsafe?) did a good job in pointing out the pilot's responsibility for retaining an adequate measure of safety in his/her flying. However, I think there are several weak areas in FAA's compliance system.

The first is in getting adequate information to pilots about new regulations, or rule changes. An example is the new rule about flying with inoperative equipment. All I have learned on this is what I have seen in commercial magazines—whose authors are not always very clear in all details. Most pilots I know learn the hard way, by getting stuck with a violation that goes on their record and stays there.

That brings me to the second problem: the attitude of some inspectors in the field. Most do well, but others seem oblivious to an operator's problems. Compliance through fear never instills a positive attitude in anyone.

David Diffenderfer
El Paso, Texas

Rulemaking changes that affect flight operations are always discussed clearly and authoratively in this publication. The Minimum Equipment List rule, for example, was described very succinctly in the May/June 1989 issue, published only a few weeks after regulatory enactment. Pilots are informed about the magazine when they receive their initial certification but they must take the initiative to subscribe. I, for one, would not fly in today's carefully regulated airspace without the magazine.

Additionally, FAA publishes a great many Advisory Circulars on subjects of pilot concern, most of them free and sent automatically to interested persons. An Advisory Circular Checklist (AC 00-2.2) describing this literature is available free from U.S. DOT, M–494.1, Washington, DC 20590. FAA specialists frequently participate in pilot seminars, and our National Accident Prevention Program provides a series of safety pamphlets, free on request from the nearest Flight Standards District Office.

All such offices, incidentally, have one inspector designated as the Accident Prevention Specialist. This inspector spearheads the National Campaign to bring about regulatory compliance through education and counseling rather than enforcement.

Finally, we have recently issued new guidelines (AC 61–98) to flight instructors giving the required annual or biennual flight reviews, which should ensure disclosure whether a PIC pilot is fully conversant with all rules affecting his or her type of flying.

• Soaring Point

In your March/April 1989 issue, you mentioned in a BRIEF that the first National Ballooning Conference at Leesburg, VA, was sponsored by FAA and the Balloon Federation of America. Actually, this event was produced by Mr. Kurt Gottschalk of Pittsburgh, PA, with a staff of volunteers.

Tom Hamilton
Sacremento, CA

Thank you for the correction. There were indeed many participants, including FAA, BFA, NTSB, etc. but Mr. Gottschalk was the catalyst and central figure. He is a concerned citizen and a veteran balloonist.

• High Flying Separation Standards

I believe that FAA and the aviation industry should work out adoption of a 1,000 foot separation minimum for en route aircraft above FL 290. Such a proposal has been studied before, but there are several reasons why it is attractive now.

For one, there is a lack of available altitudes at times for accommodating the continued growth of air travel. For another, there is the impending mandatory installation of automated collision avoidance systems on air carrier aircraft, which will make closer separation acceptable and safe.

Kevin Kane
Denver, COL

FAA has had an active vertical separation program since 1981. We are currently working with the Radio Technical Commission for Aeronautics to reduce vertical separation minimums above FL 290. This work should be completed in 1989.

• Helping Hands

We have been subscribing to your magazine for years and have enjoyed it very much. I have never been inclined to write you until receiving your recent edition (Jan/Feb 89) which related the problems of the Grumman American Tiger pilot, as set forth in your article "VFR and Winter Nights."

I then turned to your article on "General Aviation's 'Most Valuable Players' of 1988" and read of the accomplishments of Hanson and Love. While I do not wish to imply these gentlemen should not be recognized, it does seem to me that an award of some nature should go to the pilot/owner the Cessna 180 in that winter story. His actions undoubtedly resulted in saving of the life of the pilot of the Grumman American Tiger on that snowy night in Wyoming.

Bill McKamey
New Orleans

We agree. However, the Cessna pilot feels that being able to help a fellow airman out in an emergency is its own reward.

FAA AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA AVIATION NEWS, AFS-20, Washington, DC 20591.

• A Little Off Course

Reference your article on Microwave Landing Signals in the July/Aug issue of FAA Aviation News.

Is there really a Valdez, Alabama (AL) with a Microwave Landing System?

We do have such a system in Valdez, Alaska (AK).

Leon Butler
Palmer, AK

The only Valdez with an MLS is indeed in Alaska.

• Acting vs. Logging PIC

I am a Private Pilot, just finished Instrument ground school and will begin working towards my IFR rating this fall. I would like you to resolve a question that has developed in my mind after having read somewhat conflicting information regarding logging of PIC time.

An article in a commercial magazine I read tells us that we can log PIC time regardless of weather conditions even while receiving instrument instruction based on FAR 61.51 (c)(2)(i).

But in FAA Aviation News, July/August 1989 issue, a letter specifically states that "even in VFR conditions" a non-instrument rated pilot is NOT allowed to fly as PIC (presumably not able to log PIC then either). This answer is based on FAR 61.3(e).

Clarification of these "dueling" FARs would be appreciated, especially since in my copies (1988 and 1989 editions) of the FARs I do not have FAR 61.3.

Incidentally, why wouldn't these editions contain FAR 61.3, as obviously important as it is to a pilot?

Scott Davenport
Corvallis, OR

Both statements are correct, and not actually contradictory. No person who is not Instrument rated (current and qualified for the aircraft) can act as PIC of an aircraft that is on an IFR flight plan. However, an instrument rating trainee may log as PIC time (not instrument PIC) that time during which he or she is sole manipulator of the controls of an aircraft being flown in actual or simulated IMC.

As to your missing FAR Parts, we recommend that pilots only rely on editions which are unquestionably complete and automatically updated. Some "FAR editions" are in fact selections from the FARs.

United States
Government
Printing Office

SUPERINTENDENT
OF DOCUMENTS

Washington, D.C. 20402

OFFICIAL BUSINESS
Penalty for Private Use $300

BULK RATE
POSTAGE & FEES PAID
GPO
PERMIT NO. G-26

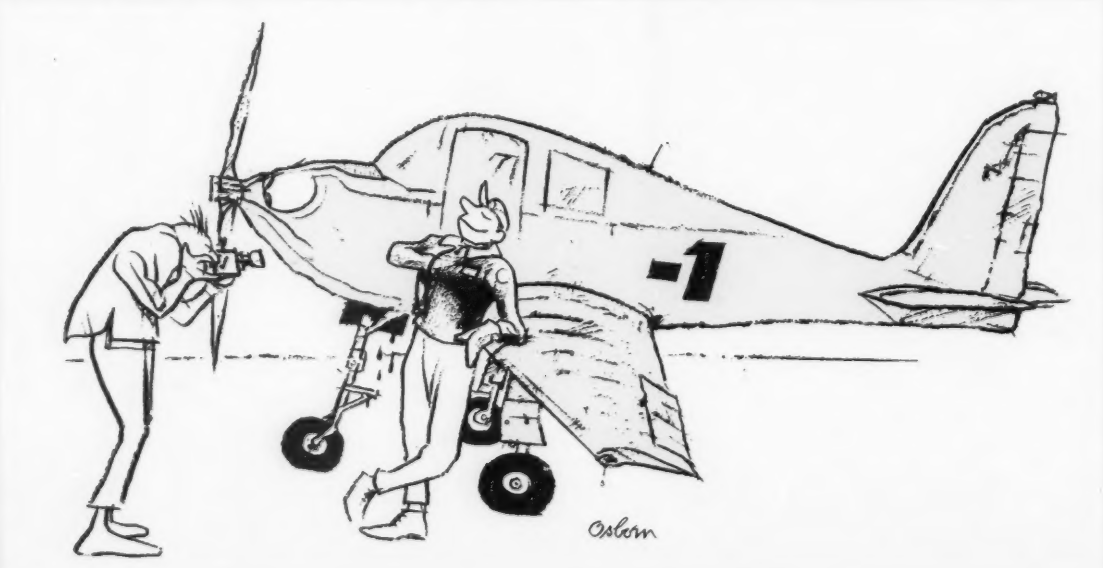
FAN SERIA300SCISSDUE004R 1
SERIALS PROCESSING
UNIV MICROFILMS INTL
300 N ZEEB RD
ANN ARBOR MI 48106

(continued from p. 13)

to buy airplanes that had originally cost the Government $5,000 and were now available for as little as $300.

This flood of cheap airplanes would bring on a new age of the barnstormer in the tradition of such headliners as Lincoln Beachey. Aerial circuses were formed using salaried pilots who thrilled the public with exhibitions of stunting, wing-walking, and parachute jumping. The romantic figure these fliers represented, sporting goggles and silk scarfs, would catch the imagination of the public. Names like Roscoe Turner, Jimmy Doolittle, and Frank Hawks would become household words, but for all the famous fliers there were hundreds of unknown individual pilots invading rural areas across the U.S.,stunting and selling rides for as little as 50¢ a person.

Years later one of these barnstormers said that after a while you knew which towns would be worth visiting. If crowds of townspeople followed the airplane to the nearest field, aviation was still a novelty and a stop would be profitable. If only a few followed or the farmer came out with a shotgun, you dipped your wings and went on to the next town.

Eventually government regulations were imposed in 1928. Air shows and races would still be performed, but they would be more rigidly controlled in hopes of making a fatal crash during the show the exception, not the rule. Aviation was now firmly entrenched in the minds of the public. In war it had proven to be a military weapon. Back home, it was being explored in a variety of commercial ventures (such as air mail delivery, crop dusting, aerial photography, and airlines) and finding them profitable.

Within a decade the days of the freewheeling barnstormers and self-appointed aircraft designers were over, but these unsung heroes had laid the foundation for the future of U.S. aviation. Their legacy was the American conviction that an airplane was no longer a sportman's toy, but a machine with a purpose and a horizon without limit. ■